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Management of Postoperative Sequelae after Impacted Wisdom Tooth Extraction

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Abstract

Surgical tooth extraction with soft tissue flap reflection and bone removal can lead to some postoperative sequelae, such as pain, swelling, and trismus, as well as complications such as surgical site infection (SSI) and alveolar osteitis. A smooth postoperative period can be ensured by proper planning, appropriate preoperative preparation, and precise surgical technique. For this purpose, various drugs have been used, including antibiotics (ABs), corticosteroids (CSs), non-steroidal anti-inflammatory drugs (NSAIDs), and enzyme products. This literature review aims to discuss the most common postoperative sequelae after the removal of impacted wisdom teeth and evaluate the methods for their management. An advanced search using the selected keywords was conducted in 4 databases (Scopus, PubMed, Web of Science, and Google Scholar) in March 2025. The study's results demonstrated that the most commonly used measures for reducing post-surgical complications is conservative therapy with antibiotics, antiseptics, corticosteroids, non-steroidal anti-inflammatory drugs, autologous platelet concentrates, etc. The postoperative management depends on the severity of the expected complications (based on the surgical trauma, duration, and the patient-related outcomes) and the benefit-risk ratio.

Keywords: impacted wisdom tooth, postoperative sequelae, postoperative complications, management

Introduction

Surgical tooth extraction with soft tissue flap reflection and bone removal can lead to some postoperative sequelae, such as pain, swelling, and trismus, as well as complications such as surgical site infection (SSI) and alveolar osteitis (1). The severity of these symptoms depends on the trauma volume, which depends on the manipulation of soft tissues during surgery, the size of the osteotomy, and the duration of the procedure (2). On the other hand, some patient-related characteristics can also influence the course of the healing process, e.g., gender, weight, and body mass have been reported to have an impact on the degree of postoperative edema (3). Many patients report functional difficulties and an impaired quality of life after wisdom teeth removal (1).

A smooth postoperative period can be ensured by proper planning, appropriate preoperative preparation, and precise surgical technique.

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For this purpose, after various surgical interventions in the oral cavity drugs have been used, including antibiotics (ABs), corticosteroids (CSs), non-steroidal anti-inflammatory drugs (NSAIDs), and enzyme products (2, 4).
Some local measures for dealing with the postoperative sequelae include cold therapy with ice packs, drainage, and low-frequency laser therapy (2).

Aim

This literature review aims to discuss the most common postoperative sequelae after the removal of impacted wisdom teeth and evaluate the methods for their management.

Materials and Methods

An advanced search using the selected keywords was conducted in 4 databases (Scopus, PubMed, Web of Science, and Google Scholar) in March 2025.

Results

Pain, edema, and trismus are common sequelae after the extraction of impacted wisdom teeth. Complications of an infectious origin include alveolar osteitis (dry socket), osteomyelitis, intraoral and extraoral fistulas, lymphadenopathy, etc. The incidence of postoperative infection varies between 1% and 13%, while the reported incidence of alveolar osteitis is 1% - 6% (5).
The management of these complications involves medication therapy, surgery, and physical therapy.
The most commonly used analgesics after third molar extraction are paracetamol and ibuprofen alone or in combination with opioid analgesics or CSs (6). When comparing the efficacy of Nimesulide and Meloxicam in postoperative pain, edema, and trismus, it was found that Nimesulide relieved edema and trismus more effectively. In terms of pain, the two drugs showed similar results. It was also found that Nimesulide had a better anti-inflammatory effect by suppressing histamine, leukotrienes, pro-inflammatory cytokines, and enzymes released by leukocytes (7).
Nimesulide increases the cellular activity of endogenous glucocorticoids (8).
Edema may result from poor surgical technique, use of blunt instruments, excessive dissection and flap traction, ineffective drainage, injury and dragging of soft tissues with the burs, excessively tightened sutures, etc. If the patient reports rapidly developing edema with a hard consistency, a hematoma should be suspected. If the edema appears later but persists, has a hard consistency, and is painful, then it may be a purulent collection. Additional signs confirming the presence of infection are increased body temperature and fever, erythema of the soft tissues in the area, fatigue, and a worsening general condition. The chances of inflammatory edema can be limited by following the principles of asepsis, gentle tissue manipulation, cooling during bone removal, thorough curettage and lavage of the surgical field, patient's compliance with postoperative instructions, use of antiseptics, and, if necessary, antibiotic prophylaxis (AP) (9, 10).

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Some authors recommend using warm compresses after the postoperative edema reaches its maximum size (2-3 days after the intervention). The rationale is that vasodilation leads to faster blood circulation and, accordingly, to faster evacuation of tissue breakdown products and a greater influx of lymphocytes, phagocytes, and antibodies. The most commonly used measures for edema control are CSs. Alternative methods include autologous platelet concentrates, enzyme products (chymotrypsin and serratiopeptidase), piezo-surgery, etc. (9, 11)

Trismus after wisdom tooth extraction may result from postoperative edema, hematoma formation, soft tissue inflammation, or damage to the sphenomandibular ligament or the medial pterygoid muscle by the needle during mandibular nerve block. Various methods are available to manage this condition, such as physical therapy, myogymnastics, analgesics, muscle relaxants, surgical decompression (in the presence of a hematoma), etc. The restriction usually resolves within 6 weeks (9).

Autologous platelet concentrates have been shown to reduce postoperative pain, edema, and trismus and increase bone density after the extraction of impacted wisdom teeth (11-13). Figure 1 presents the use of platelet-rich plasma in postextraction sockets.

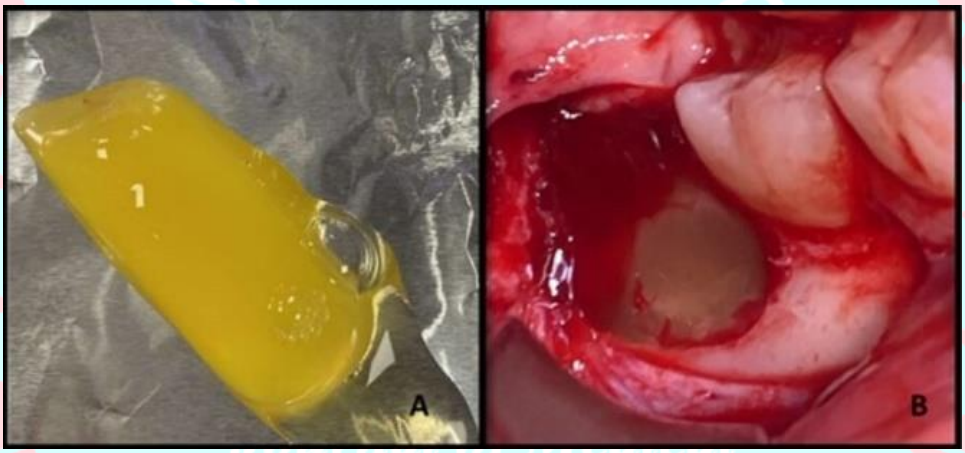

Figure 1. Platelet-rich plasma use after wisdom tooth extraction. A – activated platelet-rich plasma; B – postextraction socket filled with it.

The most common complication after the extraction of mandibular wisdom teeth is alveolar osteitis, which occurs 2-31% of the time. It is a painful complication that requires at least 4 follow-up visits in half of the cases (14).

Some researchers support AP for the extraction of impacted wisdom teeth in order to reduce the complications, while others recommend AP only in the presence of active infection at the time of the intervention (5, 15-17).

In a prospective study, Poeschl et al. compared postoperative complications after extraction of impacted wisdom teeth in 3 groups of patients. Patients in the first group received postoperative AP with amoxicillin/clavulanic acid for 5 days, those in the second group received clindamycin, and the third group was a control group without AP. The authors found that postoperative AP did not improve healing processes and did not reduce postoperative pain and trismus (17).

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Some studies indicate that the incidence of postoperative infection is lower after a single preoperative dose of AB (0.6%) compared with cases without AP (2%) or with postoperative AP for 5 days (2%). However, these complications are mild and easily controlled, which explains why the authors consider the implementation of AP to be unjustified. Moreover, it has been demonstrated that AP prevents two cases of minor complications for every 100 patients (18).

Given the low incidence of secondary infection after extraction of impacted wisdom teeth (according to some authors even below 1%) and the higher incidence of adverse drug reactions (6-7%) and the growing risk of antimicrobial resistance, a more in-depth analysis of the benefit-risk ratio in each patient is necessary before antibiotic prescription (19).

Some sources suggest that 2 g of amoxicillin can reduce the incidence of SSI after the extraction of impacted mandibular wisdom teeth. Clindamycin is recommended for penicillin-allergic patients (19).

Antibiotics can be administered locally or systemically. The topical application of minocycline after wisdom tooth extraction significantly reduces the risk of pathogenic infection (20).

Caso et al. performed a meta-analysis on the use of chlorhexidine (CHX) to prevent dry socket after mandibular wisdom teeth extraction. The authors compared preoperative rinsing with CHX, combined pre- and postoperative use, and a control group without its application. It was found that rinsing before the intervention did not yield statistically significant results, while its postoperative use for 7 days significantly reduced the risk of dry socket (21).

Due to its characteristics, CHX is used very often after surgical interventions in the oral cavity for the prevention of secondary infection (22, 23).

According to a systematic review by Hedstrom and Sjogren, rinsing with a 0.12% CHX solution preoperatively and 7 days postoperatively prevents the development of alveolar osteitis after extraction of mandibular wisdom teeth (24).

Similarly, other studies confirm that the use of 0.12% and 0.2% CHX solutions before and after extraction reduces the risk of dry socket by approximately 50% (25).

Compared to mouthwashes, bioadhesive gels provide direct contact with the socket and a longer duration of action. A single application of 0.2% chlorhexidine gel after extraction of impacted wisdom teeth successfully reduces the risk of alveolar osteitis (26).

Another group of medications used in dentoalveolar surgery are CSs, with dexamethasone and methylprednisolone being the most widely used.

Short-term administration of corticosteroids during extraction of impacted wisdom teeth reduces pain, edema, and trismus, without the risk of adverse reactions (27).

Tiwana et al. investigated the preoperative administration of CSs (8 mg dexamethasone or 40 mg methylprednisolone administered intravenously) for the simultaneous extraction of four impacted wisdom teeth and reported a successful reduction in postoperative edema, even without the use of AP (28).

Milles and Desjardins reported excellent results after oral administration of 16 mg methylprednisolone 12 hours before and 20 mg immediately after the intervention compared with a placebo group. The authors also suggested extending the therapy for another 3 days in the postoperative period (29).

A good patient response has been reported following the administration of dexamethasone before the extraction of impacted mandibular wisdom teeth. With its intravenous administration, a

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statistically significant reduction in pain was observed immediately after extraction and on the second postoperative day (2).
Shuborna et al. reported that the application of hyaluronic acid into the postextraction sockets reduced postoperative pain, swelling, and trismus (30).
Another possible complication is aphthous ulcers following oral surgery. Iatrogenic trauma is believed to be the triggering factor for their appearance. Predisposing factors include autoimmune responses, local trauma, stress, hormonal changes, iron deficiency anemia, and deficiencies in vitamin B12 or folic acid. For painful ulcers, topical anesthetics, antibacterial agents, antiseptic solutions and gels, and corticosteroids can be used. (9)
Some less common complications after extraction of impacted mandibular wisdom teeth are injuries of the inferior alveolar and lingual nerves and fractures of the mandible (31). Damage to the mental nerve can also occur when the releasing incisions in the area of the lower premolars are extended excessively. Damage to the inferior alveolar nerve can occur both during the extraction or the curettage. As a result, paresthesia or anesthesia of the lower lip and chin on the side of the injury may occur. Sometimes, sensory sensations can occur due to increased pressure in the mandibular canal caused by postoperative edema. The lingual nerve can be affected by incorrect lingual positioning of the flap. Another possible mechanism for its damage is traumatic extraction and soft tissue tearing with the forceps or cutting it during bone removal. In most cases, injured but not severed nerves regenerate within 6 weeks to 6 months (9).
Bataineh et al. found that the incidence of lingual nerve anesthesia was 2.6%, and inferior alveolar nerve paresthesia was in 3.9%. In most cases, these are transient disorders (32). The patient's discomfort can be limited using CSs, vitamin B complex, N-acetylcysteine, α-lipoic acid, NSAIDs, gamma globulin, anticonvulsants such as gabapentin, physical therapy, etc. (33-35)

Conclusion

Pain, edema, and trismus are common sequelae after the extraction of impacted wisdom teeth. Other possible complications include alveolar osteitis (dry socket), oral aphtae, nerve injuries, etc. The most commonly used measures for their management is conservative therapy with antibiotics, antiseptics, corticosteroids, non-steroidal anti-inflammatory drugs, autologous platelet concentrates, etc. The study's results demonstrated that the postoperative management depends on the severity of the expected complications (based on the surgical trauma, duration, and the patient-related outcomes) and the benefit-risk ratio.

References

1. Cho H, Lynham AJ, Hsu E. Postoperative interventions to reduce inflammatory complications after third molar surgery: review of the current evidence. Aust Dent J. 2017;62:412-419. doi: 10.1111/adj.12526.
2. Sreesha S, Ummar M, Sooraj S, Aslam S, Roshni A, Jabir K. Postoperative pain, edema and trismus following third molar surgery - A comparitive study between submucosal and intravenous dexamethasone. J Family Med Prim Care. 2020;9:2454-2459. doi: 10.4103/jfmpc.jfmpc_188_20.

DOI: 10.18044/MEDINFORM.2025122.2078 ISSUE 2, 2025

3. Sortino F, Cicciù M. Strategies used to inhibit postoperative swelling following removal of impacted lower third molar. Dental research journal. 2011;8:162. doi: 10.4103/1735-3327.86031
4. Gerova-Vatsova T. Initial clinical and cone-beam computed tomography (CBCT) outcomes of enamel matrix derivative-based regenerative therapy in vertical bone defects. Cureus. 2024;16: e72180. doi:10.7759/cureus.72180
5. Martin MV, Kanatas AN, Hardy P. Antibiotic prophylaxis and third molar surgery. Br Dent J. 2005;198:327-30. doi: 10.1038/sj.bdj.4812170.
6. Osunde OD, Adebola RA, Omeje UK. Management of inflammatory complications in third molar surgery: a review of the literature. Afr Health Sci. 2011;11:530-7.
7. De Menezes, S. A., Cury, P. R. Efficacy of nimesulide versus meloxicam in the control of pain, swelling and trismus following extraction of impacted lower third molar. Int. J. Oral Maxillofac. Surg. 2010;39:580-4.
8. Rainsford, K. D. & Members of the Consensus Report Group on Nimesulide. Nimesulide -- a multifactorial approach to inflammation and pain: scientific and clinical consensus. Curr. Med. Res. Opin. 2006;22:1161-70.
9. Goswami A, Ghorui T, Bandyopadhyay R, Sarkar A, Ray A. A general overview of post extraction complications-prevention, management and importance of post extraction advices. Fortune Journal of Health Sciences. 2020;3:135-47.
10. Dart AJ, Sole-Guitart A, Stashak TS, Theoret C. Management practices that influence wound infection and healing. Equine wound management. 2016:47-74.
11. Yotsova RV. A Split-Mouth Comparison Between Platelet-Rich Plasma and Lymphomyosot for Management of the Postoperative Sequelae After the Extraction of Impacted Third Molars: A Case Report. Cureus. 2024 Nov;16:e74646. doi: 10.7759/cureus.74646.
12. Edrev S, Peev S. Effect on pain and facial edema of platelet-rich plasma after extraction of retained teeth. Varna Medical Forum. 2020;9:155-162.
13. Siawasch SAM, Yu J, Castro AB, Temmerman A, Teughels W, Quirynen M. Autologous platelet concentrates after third molar extraction: A systematic review. Periodontol 2000. 2025;97:131-152. doi: 10.1111/prd.12600.
14. Ebenezer V, Balakrishnan R. Impact of hemostatic agents in oral surgery. Biomedical and Pharmacology Journal. 2015;7:215-9.
15. Bulut E, Bulut S, Etikan I, Koseoglu O. The value of routine antibiotic prophylaxis in mandibular third molar surgery: acute-phase protein levels as indicators of infection. J Oral Sci. 2001 Jun;43(2):117-22. doi: 10.2334/josnusd.43.117.
16. Olurotimi AO, Gbotolorun OM, Ibikunle AA, Emeka CI, Arotiba GT, Akinwande JA. A comparative clinical evaluation of the effect of preoperative and postoperative antimicrobial therapy on postoperative sequelae after impacted mandibular third molar extraction. J Oral Maxillofac Res. 2014 Jul 1;5(2):e2. doi: 10.5037/jomr.2014.5202.
17. Poeschl PW, Eckel D, Poeschl E. Postoperative prophylactic antibiotic treatment in third molar surgery--a necessity? J Oral Maxillofac Surg. 2004 Jan;62(1):3-8; discussion 9. doi: 10.1016/j.joms.2003.05.004.
18. Vincent C, Royan SJ, Abd Hamid AL, Al-Junid ST, Omar SN, Omar N, et al. Clinical Practice Guidelines on Antibiotic Prophylaxis in Oral Surgery for Prevention of Surgical Site Infection. Malaysian Journal of Oral and Maxillofacial Surgery. 2017;15:1-9.

DOI: 10.18044/MEDINFORM.2025122.2078 ISSUE 2, 2025

19. Milic T, Raidoo P, Gebauer D. Antibiotic prophylaxis in oral and maxillofacial surgery: a systematic review. Br J Oral Maxillofac Surg. 2021;59:633-642. doi: 10.1016/j.bjoms.2020.09.020.
20. Stavropoulos MF, Shugars DA, Phillips C, Conrad SM, Fleuchaus PT, White RP Jr. Impact of topical minocycline with third molar surgery on clinical recovery and health-related quality of life outcomes. J Oral Maxillofac Surg. 2006;64:1059-65. doi: 10.1016/j.joms.2006.03.007.
21. Caso A, Hung LK, Beirne OR. Prevention of alveolar osteitis with chlorhexidine: a meta-analytic review. Oral Surg Oral Med Oral Pathol Oral Radiol Endod. 2005;99:155-9. doi: 10.1016/j.tripleo.2004.05.009.
22. Gerova-Vatsova T. The efficacy of collagen barrier membranes in regenerating vertical bone defects: a clinical and cone beam computed tomography (CBCT) assessment. Cureus. 2024;16:e72550. doi:10.7759/cureus.72550
23. Gerova-Vatsova T. Investigating the efficacy of regenerative therapy with autogenous platelet-rich plasma in vertical bone defects. Cureus.2024;16:e72686. doi:10.7759/cureus.72686
24. Hedström L, Sjögren P. Effect estimates and methodological quality of randomized controlled trials about prevention of alveolar osteitis following tooth extraction: a systematic review. Oral Surg Oral Med Oral Pathol Oral Radiol Endod. 2007;103:8-15. doi: 10.1016/j.tripleo.2006.01.007.
25. Daly B, Sharif MO, Newton T, Jones K, Worthington HV. Local interventions for the management of alveolar osteitis (dry socket). Cochrane Database Syst Rev. 2012 Dec 12;12:CD006968. doi: 10.1002/14651858.CD006968.pub2. Update in: Cochrane Database Syst Rev. 2022;9:CD006968. doi: 10.1002/14651858.CD006968.pub3.
26. Amaliya A, Ramadhanti R, Hadikrishna I, Maulina T. The effectiveness of 0.2% chlorhexidine gel on early wound healing after tooth extraction: a randomized controlled trial. European Journal of Dentistry. 2022;16:688-94. doi: 10.1055/s-0041-1739544.
27. Ngeow WC, Lim D. Do corticosteroids still have a role in the management of third molar surgery?. Advances in therapy. 2016;33:1105-39.
28. Tiwana PS, Foy SP, Shugars DA, Marciani RD, Conrad SM, Phillips C, et al. The impact of intravenous corticosteroids with third molar surgery in patients at high risk for delayed health-related quality of life and clinical recovery. J Oral Maxillofac Surg. 2005;63:55-62. doi: 10.1016/j.joms.2004.01.029.
29. Milles M, Desjardins PJ. Reduction of postoperative facial swelling by low-dose methylprednisolone: an experimental study. J Oral Maxillofac Surg. 1993;51:987-91. doi: 10.1016/s0278-2391(10)80041-2.
30. Shuborna NS, Khoo LK, Bhattarai BP, Chaiyasamut T, Kiattavorncharoen S, Pairuchvej V, et al. Intra-socket application of Hyaluronic acid reduces pain and swelling following wisdom teeth removal. Journal of Oral Medicine and Oral Surgery. 2022;28(1):14.
31. Selimović E, Ibrahimagić-Šeper L, Šišić I, Sivić S, Huseinagić S. Prevention of trismus with different pharmacological therapies after surgical extraction of impacted mandibular third molar. Med Glas (Zenica). 2017;14:145-151. doi: 10.17392/871-16.
32. Bataineh AB. Sensory nerve impairment following mandibular third molar surgery. J Oral Maxillofac Surg. 2001;59:1012-7; discussion 1017. doi: 10.1053/joms.2001.25827.
33. Supra R, Agrawal DK. Peripheral nerve regeneration: opportunities and challenges. Journal of spine research and surgery. 2023;5:10.

DOI: 10.18044/MEDINFORM.2025122.2078 ISSUE 2, 2025

34. Viana MD, Lauria PS, Lima AA, Opretzka LC, Marcelino HR, Villarreal CF. Alpha-lipoic acid as an antioxidant strategy for managing neuropathic pain. Antioxidants. 2022;11:2420.
35. Kwon G, Hohman MH. Inferior Alveolar Nerve and Lingual Nerve Injury. 2023 Mar 1. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2024 Jan–. PMID: 36943986.

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